

## CONCLUSIONS

### **Use of CIR Imagery and GIS Software to Inventory Wetland and Riparian Areas**

Overall, the project was successful in using CIR imagery and GIS software to inventory wetland and riparian areas. However, it would take far more effort to attempt to delineate all the wetland areas identified, so detailed field work is still required to evaluate the wetlands identified by this project. The methods used allowed for completing an inventory of a 520 square mile area that is mostly private land without needing to obtain access to the land. Mapping these areas in the field and gaining access to all of the private land would have been time consuming, and many areas would have been inaccessible.

The steps taken to develop the high-resolution CIR imagery, including the lower altitude flight, scanning of the CIR film positives, use of a high-resolution photogrammetric scanner, and the orthorectification software resulted in high quality imagery that could be used with GIS software as an image layer. It would have been difficult to analyze the images if the resolution was greater than 1 to 2 meters. Since the imagery was developed is has been used by many others for projects unrelated to this one due to the high quality. The primary disadvantage of using the high-resolution imagery was the cost. It cost about \$31,500 to develop the imagery, which is about \$61/square mile. At this cost, using these methods to assess larger areas may be cost prohibitive.

While the CIR imagery did work well for this project, another method that could have been used would be to obtain multispectral digital image data and use computer software to classify wetland and riparian features. This type of approach may work better for large areas such as the entire state of Montana. More effort is required up front to develop the classifications, but once they are developed, large areas could be inventoried rapidly.

The use of GIS to compile the spatial data was effective. The GIS software allows for importing other existing spatial data such as soils, depth to ground water, or landuse layers into the project. It will also be easy to update and add to the GIS databases as more information on wetland and riparian areas is obtained.